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THE AGRICULTURE AND TRADE OF THE *West Indies*

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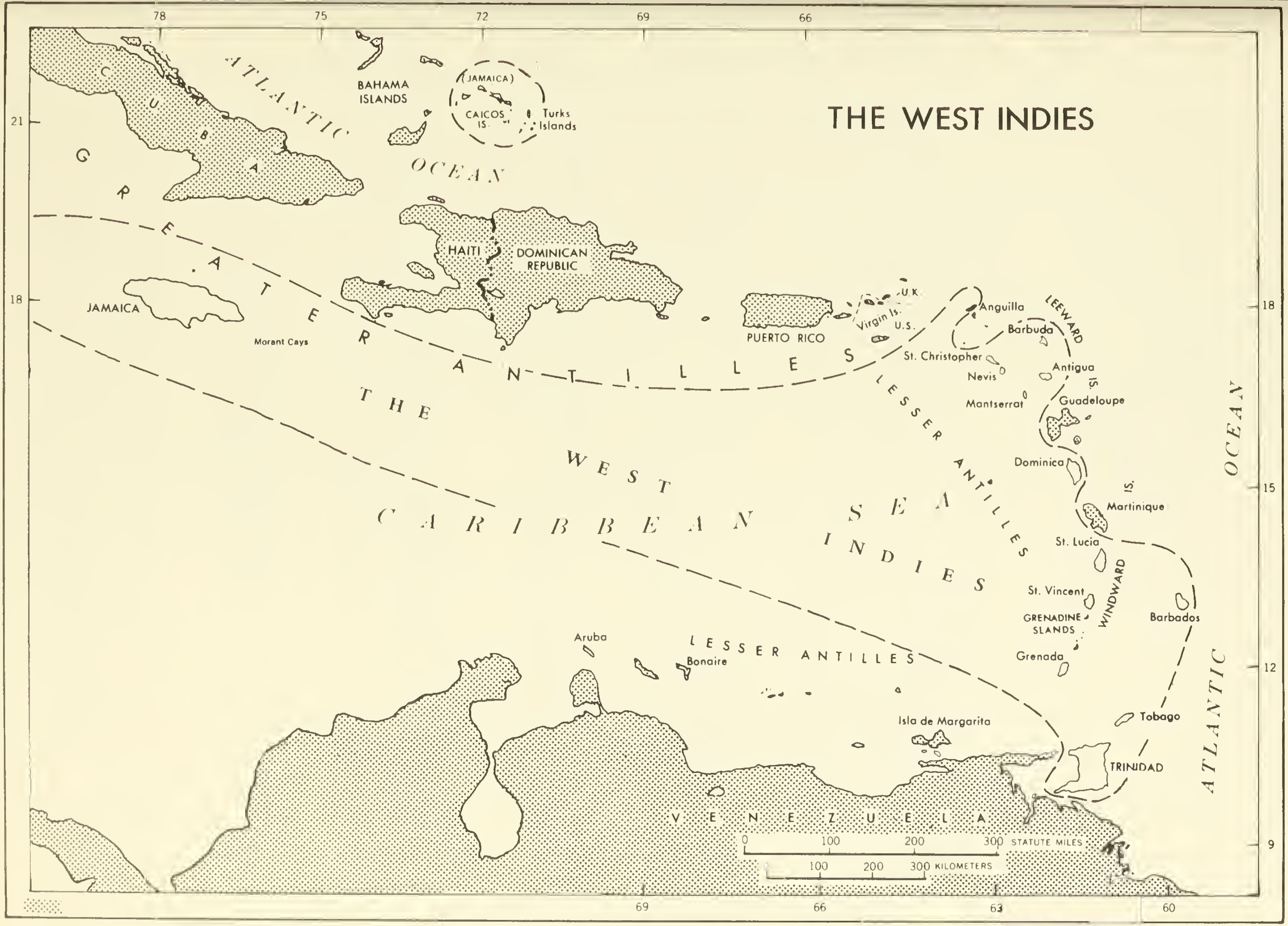
UNITED STATES DEPARTMENT OF AGRICULTURE

THE WEST INDIES



U. S. DEPARTMENT OF AGRICULTURE

NEG. 2073 FOREIGN AGRICULTURAL SERVICE

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THE AGRICULTURE AND TRADE
OF
THE WEST INDIES [1]

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SUMMARY

The West Indies is an important market for U.S. commodities, ranking tenth for exports and ninth for total trade in all Latin America in 1959. The overall economy of The West Indies is determined by the petroleum and asphalt industries of Trinidad, the bauxite industry of Jamaica and the rapidly expanding tourist industry. But agriculture supports nearly 40 percent of the population, contributes about 20 percent of the national income, and supplies more than 40 percent of the value of all exports.

The islands forming the Federation are scattered in the Caribbean Sea, and have a population of about 3 million on a combined area little larger than that of Massachusetts. Nearly all the islands are mountainous, with less than half the total area considered suited for agriculture. The climate is tropical, but is modified by altitude and the trade winds.

About 45 percent of the agricultural land is in crops, and 30 percent in pastures--mostly rough grazing land. The other 25 percent is unused cropland, most of which forms part of estates--chiefly sugar plantations--which were established in early colonial days. The island governments have instituted land settlement programs to make more land available to small farmers, tenant farmers, and landless laborers.

Advanced production methods and farm machinery and equipment are used on most sugar estates. The farm practices of the small-scale farmer are generally backward but have improved considerably since 1946, particularly in the increased use of fertilizer. Cooperatives are being encouraged so that fertilizers, credit facilities, and farm machinery may be available to small farmers.

Farm Development Plans have been established to increase agricultural production through crop planting subsidies, loans or grants for land improvement, and the creation of new agricultural marketing facilities. Trade

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[1] "The West Indies" is the official name of the following British colonies in the Caribbean which federated in January 1958: Barbados, Jamaica; Trinidad and Tobago; the Windward Islands: Dominica, Grenada, St. Lucia and St. Vincent; and the Leeward Islands: Antigua, Montserrat, St. Kitts, Nevis and Anguilla. The British Virgin Islands are not included here in the Leeward group as they did not join the Federation.

policies are being greatly liberalized, with the retention, however, of protective legislation for local industries. Research is conducted on the principal crops, and opportunities for agricultural training are being increased, with outside assistance in this and extension work.

The West Indies is chiefly a sugar-producing area. Bananas, cacao, citrus, coffee, spices, and cotton are also important cash crops on some of the islands. Apart from these export crops, the Federation is heavily dependent on imported supplies for most of its food, principally grain, dairy products, meat, and fish; and for a large part of its industrial lumber requirements.

Development programs should bring more land into production, improve agricultural practices, and thus increase the productivity of small farms. The governments are politically stable and production may be expected to increase unless deterred by drought or hurricanes.

Factors Affecting Agricultural Production

Trinidad, the second largest island in the group, is at the southern end of the island chain, while Jamaica, the largest, lies some 1,135 miles to the west. The islands differ greatly in size, geologic origin, and surface form. Most of them, however, are mountainous, many having peaks over 3,000 feet. But only in Jamaica do the mountains exceed 4,000 feet.

About 80 percent of Jamaica consists of a limestone plateau which rises to 3,000 feet and from which spring mountain masses reaching a maximum height of 7,402 feet at Blue Mountain Peak. Low flat coastal plains lie between the sea and the marginal cliffs of the plateau. Rivers have cut deep valleys back from the coast. Plantation agriculture is mostly confined to these coastal plains and valleys.

The Turks and Caicos Islands and the Cayman Islands, formerly dependencies of Jamaica, were given separate governments in July 1959, but still share the same Governor. The former group, composed entirely of limestone, can produce a few crops for local use. Its salt ponds supply the salt for commercial use. The latter group, the Caymans, is composed of limestone and coral and is capable of producing a wide range of tropical fruits and vegetables. Both groups are low-lying and have no streams or rivers.

Trinidad is within sight of the Venezuelan mainland. A heavily forested mountain range reaching 3,085 feet covers the northern portion of the island. There are two parallel ranges of steep hills in the center and south of the island, with occasional peaks reaching 200 to 500 feet in height. In the humid atmosphere of these hillsides, cacao and coffee thrive.

Tobago, which is governed from Trinidad, lies 20 miles to the northeast. It is mountainous and densely forested, with cacao growing on its hillsides.

Barbados rises from its western coast in terraces to a central ridge, the highest point being 1,100 feet. Except for a small area in the northeast, known as the Scotland District, the soil is coral limestone. The comparatively level land facilitates planting sugarcane.

The Windward Islands consist of four volcanic islands: Dominica, Grenada, St. Lucia, and St. Vincent and their dependencies, the Grenadines. Mountain ranges running generally from north to south of the islands, create leeward and windward areas. There are numerous small rivers or streams running to the sea. The Leeward Islands comprise Antigua (with its dependencies Redonda and Barbuda), Montserrat, St. Kitts, Nevis, and Anguilla. Antigua, the largest, consists of fairly level plains at no great height above sea level, except for a small range of hills rising to about 1,300 feet. There are only a few small streams. The next three islands have mountains with heavily forested upper slopes and lower slopes traversed by deep ravines, a few of which have water all year round. Only about one-third of Anguilla has soil of adequate depth for cultivation, but this is very fertile. On all the islands water supplies are limited in relation to needs.

Physical Characteristics

Climate.--All of the islands of the Federation lie between latitudes 10 and 22 degrees north of the Equator and have a moderately high temperature, which varies little from season to season. The northeast trade winds, which sweep the islands, temper the heat and produce great differences in rainfall on the eastern and western sides of the mountains. Annual average precipitation ranges between 49 and 91 inches except in the Turks and Caicos Islands where it is only 29 inches. Rainfall is heaviest from June to December (termed the rainy season). The dry season on nearly all the islands extends from December or January to April or May. In the mountain areas the temperature may be 5 to 10 degrees lower than along the coast, and the precipitation twice as great. Sugarcane and bananas are grown extensively in the hot fertile plains and valleys, but citrus and coffee thrive on the warm hillsides. Cacao is grown in the hot humid forested hills sheltered from the winds.

With the exception of Grenada and Trinidad and Tobago, the islands are in the hurricane zone and may suffer severe damage to crops about every 7 years. Grenada, however, was severely damaged by a hurricane in 1955. Hurricanes are rare in the Leeward Islands, also in Barbados which is on the fringe of the zone.

Jamaica has the greatest divergence of climate in the Federation, tropical at the coast and temperate in the mountains, falling as low as 40°F. in the highest part of the Blue Mountains when an occasional burst of "polar" air reaches the island during the winter.

Soils.--Among the many different soils in The West Indies the Latosols are the most extensive. Though low in plant nutrient content they have a wide range of suitabilities for agriculture. On steep slopes, as on the greater part of the limestone plateau of Jamaica, however, they are unsuited for cultivation. Latosols in The West Indies are considerably more fertile than typical Latosols elsewhere in the world. On these islands the soils have been rejuvenated in varying degrees by relatively recent deposits of volcanic ash. These heavy clay soils are difficult to work and are not widely used for agriculture, but in eastern and southwestern Trinidad rice and vegetable crops are grown on some areas.

Alluvial soils make up the bulk of the cultivated land in The West Indies. They are found in the mountain basins and on the broad flat plains of southern Jamaica and in northeastern Trinidad. These soils are improved by irrigation and drainage and are used principally for sugarcane. Citrus fruit and pineapples are also grown on them in the mountain basins of Jamaica. The associated alluvial soils lie along streams and throughout many areas in the islands in association with other soils, and generally comprise the most fertile and intensely cultivated land.

Population.--The West Indian population, estimated at approximately 3 million in 1956 and 3.1 million in 1958, is increasing at an average annual rate of 2.1 percent. Many races live together in harmony in these islands. In 1946 the population was 68.9 percent Negro, 18.9 percent mixed, 1.9 percent white, 9.6 percent East Indian, 0.5 percent Chinese, and 0.2 percent others.

Recent data on the number of people employed in agriculture are not available, but in the mid-1940's the farm labor force was about two-fifths of the total labor force. This figure concealed sharp variations from one part of the Federation to the other. A large proportion of men and women classed as hired labor also work small farms. These farms are generally too small to support them or to fully occupy their time during the off seasons of the sugar industry, which is highly seasonal, and which is the largest single employer of hired labor. There is widespread rural unemployment and underemployment.

Institutional Characteristics

Land use.--Not much more than two-fifths of the land area of The West Indies is considered as agricultural. Moreover, a substantial share of the agricultural land falls into the category of unused cropland, which includes idle land on estates, abandoned cropland - abandoned in part under a system of shifting cultivation - and land potentially productive for agriculture. The latter could be reclaimed and some of it needs irrigating to become highly productive. Land used for crops and pasture amounts to only a little over one-third of the Federation's land area.

Most of the pastureland is in Jamaica, where extensive areas are too dry, too rough, or too thinly covered with soil for cultivation and are suitable only for rough grazing. Very little of the pastureland is irrigated. Jamaica contributes proportionately less cropland than pasture to The West Indies total. It accounted for over half of the cropland, and Trinidad and Tobago for one-fourth. Barbados came next with about 5 percent, the Windward Islands combined had 13 percent, and the Leeward Islands 4 percent.

Since 1953-54 (the latest year for which complete data are available), the planted area has increased in Jamaica and in Trinidad and Tobago, partly

TABLE 1.--Land: Use by islands, selected years, 1943-58 1/

Island	Total area	Population in 1958	Agricultural land				Forest land	Wasteland and other
			Total	Cropland 2/	Pasture 3/	Unused cropland		
	1,000 acres	Thousands	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Jamaica	2,823	1,651	1,361	662	436	263	4/ 500	962
Jamaican dependencies:								
Cayman Islands	64	9	11.5	.5	7	4	4/ .5	52
Turks & Caicos Islands	106	7	9	2	.2	7	4/ 1	96
Trinidad and Tobago	1,267	801	440	321	13	106	578	5/ 249
Barbados	106	238	86	67	19	0	1	19
Windward Islands:								
Dominica	195	67	50	42	4	4	6/ 145	(6/)
Grenada (including Carriacou)	85	92	58	52	6	0	13	14
St. Lucia	152	92	56	47	9	0	49	47
St. Vincent (including Grenadines)	96	82	38	28	5	5	44	14
Total Windward Islands	528	333	202	169	24	9	251	75
Leeward Islands:								
Antigua and dependencies:								
Antigua	69	57	47	18	11	18	7/ 9	13
Redonda and Barbuda	40		8	1	7	0	11	21
Montserrat	21	14	12	8	4	0	5	4
St. Kitts	44	59	20	16	3	1	16	8
Nevis	33		23	7	5	11	5	5
Anguilla	22		2	2	0	0	0	20
Total Leeward Islands	229	130	112	52	30	30	46	71
Grand total	5,123	3,169	2,221.5	1,273.5	529	419	1,377.5	1,524
	Percent		Percent	Percent	Percent	Percent	Percent	Percent
Percent of total area	100		43.3	24.9	10.3	8.2	26.9	29.7

1/ Years shown are as follows: Jamaica 1955; Cayman, Turks and Caicos Islands, 1943; Trinidad and Tobago, Grenada, Montserrat and St. Vincent, 1957; Dominica and St. Lucia, 1958; and the rest 1946. 2/ Includes land under tree crops and medium and short-term crops; also land in process of preparation for crops or normally cropped but fallow. 3/ Pasture in all islands is mostly rough grazing land. 4/ Private forests and forest reserves; mostly of low productivity in Jamaica. Later the forest land was reduced in Jamaica and depleted altogether in the dependencies, and in Barbados. 5/ Includes 12,530 acres in abandoned tree crops, brush, and secondary growth, some of which probably could be used at least for tree crops. 6/ Forest land includes some wasteland. 7/ Mostly dry scrub, much of which is grazed.

as a result of land settlement efforts and some land reclamation. The greater part of the cropland is taken up with sugarcane and tree crops.

TABLE 2.--Use of cropland in Jamaica, 1957, and Trinidad and Tobago, 1956, by crops, with comparative totals for 1953-54

Crop	Jamaica (1957)		Trinidad and Tobago (1956)		Total	
	Planted area	Share	Planted area	Share	Planted area	Share
	1,000 acres	Percent	1,000 acres	Percent	1,000 acres	Percent
Sugarcane	147.0	29.8	69.3	21.1	216.3	26.4
Coconuts	120.1	24.4	41.8	12.8	161.9	19.7
Cacao	19.8	4.0	122.3	37.4	142.1	17.3
Bananas	106.3	21.5	4.3	1.3	110.6	13.5
Citrus	26.9	5.5	11.3	3.5	38.2	4.6
Coffee	19.0	3.9	7.0	2.1	26.0	3.2
All other	53.9	10.9	71.2	21.8	125.1	15.3
Total	493.0	100.0	327.2	100.0	820.2	100.0
Total planted area in 1953-54	426.0		310.0		736.0	

Size and tenure of farms.--Farms in The West Indies vary greatly in size from large estates of thousands of acres to tiny holdings of less than 1 acre. Although farms under 100 acres account for about 95 percent of the total number of farms, they account for less than half of the land. Estates 500 acres and more in size probably take up two-fifths of the farmland.

The majority of the small farms range from 1 to 10 acres; these are usually located on marginal, often steep, land and are cultivated by families to provide their basic food needs. Most of these small-scale farmers are part-time cultivators only and depend on employment on the estates or other types of work to supplement their farm income. Numerous holdings of less than 1 acre may also be regarded as true farms, since a substantial part of the income of the household is derived from them.

Farms of 1 acre and over in Jamaica were predominantly owner-operated when the last census was taken in 1943 and are probably still so today. In Trinidad and Tobago large numbers of farms of 1 acre and over were rented and managed as well as owner-operated in 1956, but, in area, owner-operated farms predominated. Owner-operated farms include the company-owned estates, among which are the 5 large sugarcane estates in Trinidad and Tobago accounting for more than 50,000 acres of crops and pasture in 1956. Managed farms in Trinidad and Tobago, belonging usually to absentee owners, are practically all under 100 acres; they averaged about 10 acres in size in 1956, compared with 5 acres for rented farms.

In Barbados, Montserrat, and the Windward Islands, owner-operated farms predominate. In Antigua, nearly all of the farmland in 1949 was either rented (48 percent) or run by managers (40 percent). Tenancy is also common in Nevis.

The plantations that survived from colonial days have not been able to offer adequate employment opportunities to the rapidly increasing population. The sugar industry in particular has been subject to long periods of depression in which estates have gone out of cultivation and unemployment has increased. Because of this situation, the demand for land reform has taken the form of a demand for land settlement, and the island governments instituted land settlement programs to provide cropland for small farmers as a means of relieving unemployment and improving underemployment conditions. In 1943 the Jamaican Government embarked on its program to buy land for small farms. Some land also was brought into use through irrigation and drainage.

Antigua, Trinidad and Tobago, and some other islands favor the leasehold system for land settlement projects, whereby security of tenure is assured by long-term leases conditioned on the observance of good farm practices. Jamaica and a few islands have adopted the freehold system.

Production practices.--The large estates, which generally occupy the more fertile areas of the islands, are usually intensively cultivated and well mechanized. Small-scale farmers have no traditional systems of cultivation and rotation to protect the land from exhaustion of fertility. Their planting and cultivation methods are more or less haphazard, but interest in new methods is increasing, particularly for raising food crops and livestock.

Many of the important crops grown on the islands are tree crops, which cannot be rotated. Mixed stands of tree crops such as cacao, coffee, coconuts, and citrus are grown on some large estates. In some areas the small farms are highly specialized, as in the coffee areas of the Blue Mountains of Jamaica and the ginger area in the center of that island. On the other hand, in the lowlands of the parish of St. Elizabeth, Jamaica, where a fairly well defined rotation is practiced, an efficient kind of dry farming has evolved.

Tenants or freehold farmers on small or medium-sized holdings practice a diversified kind of nonrotational farming. Permanent tree crops such as cacao, coffee, citrus, and other fruit, as well as bananas, are often mixed. Short-term food crops are grown under both shifting and regular cultivation and are often planted among the tree crops.

Many irrigation projects are now underway in Jamaica to meet the great need for water. Irrigation water is obtained either by diversion from a dam or from wells. In the south of Jamaica some sections of the coastal alluvial plains have been unproductive because of high salinity, or in some places, because of low rainfall and lack of water. Irrigation has added over 41,000 acres for crops and 6,000 acres for pasture. The saline lands have been irrigated and planted to rice and it is expected that the salinity will eventually be reduced so that other crops can be grown in reclaimed areas.

Trinidad is draining and reclaiming its swamps on the east and west coasts. Much of the land will be used to produce rice and thus reduce the large rice imports.

In Barbados, lack of water is the principal factor limiting plant growth. Irrigation is used on large plantations and on a growing number of small holdings. A Water Control Board issues permits to obtain water from wells for this purpose.

The largest market for agricultural machinery is the sugar industry, and the large estates have been mechanized to a considerable degree. In contrast, almost no modern techniques have yet been applied to small-scale farming. There is no intermediate equipment between the most advanced agricultural machinery used on the larger farms and the simple hoe of the small farmer. Even though a few tractors are beginning to be used on some of the islands, few farmers have or use even a simple animal-drawn two-way plow. Almost all small-scale cultivators work the ground by hand and use animals, generally donkeys, only for transporting goods to market.

The Coffee Industry Board of Jamaica has mechanized the handling of the island's coffee production. But the many tree crops slow down mechanization because they do not lend themselves as easily to the use of machinery as most field crops do. To cultivate cacao, coconuts, citrus, and other tree crops, farmers use mainly simple implements such as cutlasses (machetes), pitchforks, and hoes.

Sugarcane is the principal crop for which fertilizers have been used for any length of time, mostly by the large estates and big farmers. It is the only crop fertilized systematically and in quantity, and ammonium sulphate is the principal fertilizer used.

More recently, fertilizer has been applied to citrus and bananas in Jamaica and some of the other islands, and in Trinidad to cacao, bananas, coconuts, coffee, and rice. Fertilizer spreaders are in use on the estates. Lime is used by sugarcane growers in Trinidad, but it is not generally used on other crops. Increased sugar production has expanded the demand for fertilizers. In Barbados, fertilizers, improved techniques, and improved varieties have increased yields considerably in some instances. Commercial fertilizers are widely used by estates in St. Kitts for sugarcane and cotton and in St. Vincent for sugarcane, cotton, and arrowroot.

Most of the fertilizers must be imported and are admitted duty-free if of Commonwealth origin, or if not, they are liable only for the difference between the preferential and general tariff rates. A fertilizer plant erected in Trinidad went into full operation in December 1959. Annual production is expected to be 95,000 short tons of ammonium sulphate and 28,000 tons of urea.

The Agriculture Departments and government land settlement organizations in the various islands assist the small farmers through a fertilizer subsidy plan or a loan arrangement, to make fertilizers available for use on crops, especially food crops, and also grasses on some islands. They endeavor also to improve plant breeds and make seeds and technical advice available to farmers. In addition, disease-resistant or high-yielding seeds or clones developed through research at the Imperial College of Tropical Agriculture in Trinidad are shared with the other islands, where they are multiplied and distributed to the farmers.

West Indian farmers suffer substantial crop losses from numerous diseases and pests. Diseases such as mosaic on sugarcane, Panama disease on bananas, witches' broom on cacao, and gummosis and die-back on citrus are less serious because resistant varieties have been introduced or, as for citrus, budding is done on disease-resistant stocks. Some diseases and insects affecting these and other crops are controlled by the use of insecticides and fungicides.

Except for Jamaica, the livestock industry is undeveloped in the islands and there is little information available on animal diseases in most of the area. Vibriosis is one of the major causes of livestock infertility in Jamaica, and control measures are being adopted. Brucellosis is also prevalent in Jamaica, but is not considered of sufficient importance to justify applying permanent control measures.

Agricultural policies.--The Federation coordinates the policies and programs of the various islands, but as yet it has not instituted a policy distinct from the various island policies.

The islands of the Federation have been the focus of attention and study by numerous British, American, international, and regional organizations, all advise and work with the local governments, either directly or through the Caribbean Commission, to improve the economic status of the area. Agriculture has received a sizable share of the technical and financial assistance.

Agricultural associations, cooperating on a regional basis and aided by their local governments, have obtained from the United Kingdom a protected market or support schemes, or both, for the principal crops of the area.

The policy of the island governments is to encourage agricultural rehabilitation and development. Measures taken with this aim include import limitations, subsidies, and loan assistance for planting such export crops as citrus, cacao, coffee, and coconuts, also for planting food crops for local consumption, and for more fertilizers and farm and pasture improvement.

Jamaica's Farm Development Program includes comprehensive soil and land-use surveys, increasing land acreage by drainage and reclamation, and encouraging efficient land use. Trinidad's 5-year development program, 1958-62, has set aside large allotments for markets and marketing facilities, drainage of the Oropouche Lagoon, and funds for the Agricultural Credit Bank (for loans to small farmers), in addition to planting subsidies and aids to farmers.

In Barbados the government's policy is to convert to pasture much of the land now in sourgrass which is used for mulching sugarcane, and in this way to increase both dairy and beef cattle output.

The Commonwealth countries share in imperial preference. In addition sugar has a further preference advantage -- a negotiated price (for a quota), which was 48 percent higher than the world market price in 1956 and 58 percent higher in 1958. Bananas enter the United Kingdom duty free and enjoy a price support. Under the 1959 citrus agreement between the United Kingdom and The West Indies, covering a period of 5 years, citrus will receive price support and a fertilizer subsidy, also an extension of a higher degree of tariff preference. Cacao and coffee are given only minor preference and consequently are exported to many countries.

Imports have been subject to exchange control which discriminated against imports from the United States and other dollar area countries. But in 1959 the individual islands of the Federation liberalized trade with the dollar area countries following similar action by the United Kingdom Government. Most products from the dollar area can now be imported without a license, though many of the food imports such as wheat flour, poultry meat, and shell eggs are still licensed on several islands. Controls are retained on some items in order to protect local industries. The most important of these are sugar, fats and oils and their related products, and rice.

Agricultural organizations.--Official or semiofficial organizations established by the various island governments help the local Departments of Agriculture to expand and develop agriculture and market farm products. These organizations include various boards called marketing boards, growers' associations, and cooperative growers' associations, which are statutory bodies operating sometimes along cooperative lines, that have usually been granted monopolies for export crops, such as bananas. The statutory boards represent the growers, produce dealers; and the government.

Agricultural development in Jamaica has been assisted by additional statutory bodies such as the Agricultural Development Corporation and the Jamaica Agricultural Society. The leaders of the agricultural societies in Jamaica and Trinidad are taking initial steps to form a Federal Agricultural Society.

Producers' or growers' associations are increasing throughout the Federation. Small-scale farmers are being encouraged to cooperate in transportation, processing, packing, and sale of their crops under acceptable standards, and to secure credit for such items as fertilizers.

Two organizations partly concerned with agriculture that have had considerable influence on the policies in the islands now making up the Federation are the Development and Welfare Organization and the Caribbean Commission.

The Development and Welfare Organization in the British West Indies was set up by the Colonial Office in 1940 and dissolved in March 1958 when its functions were transferred to the federal authorities of The West Indies. This organization was of great assistance not only in advising on programs but in carrying out programs and research work, which no island could have been prepared to undertake alone.

The Caribbean Commission, established in 1946, comprises representatives of the four nations with territorial interests in the Caribbean; that is, the United States, France, the Netherlands, and the United Kingdom. It has provided a useful link between distant territories widely separated by the sea. It has helped these territories to secure from outside sources expert advice on many of their economic, agricultural, and social problems. The Commission will be succeeded by the Caribbean Organization in 1961 upon acceptance by the signatory parties of the agreement signed in June 1960. France will be a member of the new unit in behalf of Guadeloupe, Martinique, and French Guiana. The other three nations who were members of the old unit, will be observers only. The other members will be The West Indies and the islands, colonies, and territories formerly represented by the other three nations.

Mention should also be made of the Regional Economic Committee, established in 1951 as the first purely West Indian regional body. Its success was an important factor in paving the way towards political federation. Its duties were taken over by the Pre-Federal Organization in October 1957.

Agricultural credit.--Many institutions are involved in financing agriculture, but credit is still not easily accessible to the farmer, partly because of the inadequate number of rural offices. Loans for agriculture are made by the Colonial Development Corporation--a United Kingdom Government organization--by development corporations in the various islands, and by various agricultural funds and banks. In addition, the associations or statutory boards for individual crops such as sugar and bananas, make loans for specific crops.

In a general way, institutions extending agricultural credit supplement one another. Commercial banks chiefly extend short-term credit to planters, to agricultural processing industries, and to those middlemen engaged in handling agricultural products and supplies. The Co-operative Banks, Ltd., plays an important part in financing for small-scale farmers, at times on a medium-term basis.

Government and government-sponsored credit agencies extend a wider range of credit to a large number of farmers and agricultural enterprises not generally eligible for bank loans or investment loans from other existing credit sources. Cooperative credit societies and other cooperatives or societies functioning along cooperative lines extend short-term credit mostly to small farmers. In Jamaica, however, the cooperative credit societies also extend medium and, less frequently, long-term loans.

Noninstitutional agricultural credit serves small farmers mainly for consumer goods. One of the major weaknesses of agricultural credit extended to small farmers lies in the use of many loans for consumption, rather than production, purposes.

Education and research.--Few young people in The West Indies receive formal training in agriculture. The 1953 report on Jamaica by the World Bank Mission found that education in the federated islands was academic and recommended that more practical education be stressed. About 76 percent of the population over 10 years of age was literate at the time of the 1946 Census and this proportion has probably increased.

There are two excellent schools in the Federation, both on a level with the colleges in England: The Imperial College of Tropical Agriculture in Trinidad, which is an outstanding school in tropical agriculture of world renown, and the University College of The West Indies in Jamaica. The two were amalgamated in late 1960. There are two agricultural schools below college level, one in Jamaica and the other in Trinidad, also four practical agricultural centers in Jamaica, and an industrial training center in Trinidad.

Agricultural extension services in the two largest islands and Barbados, range from services more nearly approaching those given in the United States, to advisory services. There are no organized extension services in the other islands.

Research for all the islands on sugarcane breeding is centralized in Barbados at the Central Sugar Cane Breeding Station. This work is supported by the island governments and the Sugar Manufacturers Associations. Work on sugar technology is conducted at the Imperial College of Tropical Agriculture. The Regional Research Center at the College is also working with bananas, cacao, and coconuts, seeking material immune or highly resistant to certain diseases, or control in the case of coconut red ring disease.

Technical assistance to the federated islands covers a wide range of projects. The organizations giving assistance include the Caribbean Commission, Food and Agriculture Organization of the United Nations (FAO), and International Cooperation Administration (ICA). Projects include loaning specialists to assist and give advice in such fields as home economics, soils, farm machinery, credit and vocational education, irrigation, engineering, entomology, marketing, housing, health, and roads.

Marketing and transportation.--On most of the islands there is a need to further improve marketing and transportation facilities to adequately handle agricultural products.

Marketing arrangements are being improved. However, fruits and vegetables for domestic consumption are still distributed through the traditional open markets where the "hucksters" (chiefly women) sell basket loads of farm produce brought in by foot or bus from the countryside. This system, which has proved suitable for small farmers, is being challenged by the development of farmers' cooperatives whose produce is purchased by the Government's Marketing Department and sold wholesale to tourist hotels and other large volume buyers, and by producer associations.

Transportation is good on some islands. Jamaica has excellent transportation and communication facilities. Trinidad and Barbados have good roads. Most of the islands have road development programs underway. The larger islands are served from other countries by various steamship companies. A schooner fleet carries freight between the islands, but there is a lack of rapid, economical shipping between the scattered units. The local governments have been seeking ways to assist the transfer of agricultural products for consumption within the area from one island to another, as well as for interisland transshipment of goods coming into the main harbors in the larger islands. Two passenger-cargo ships for interisland trade have been promised The West Indies as a gift by Canada.

Crop and Livestock Output

A wide range of crops is made possible by the diversity of physical features within the islands rather than by any differences in latitude -- only 12 degrees from the extreme northern to the extreme southern island.

Jamaica's coastal plains and valleys, particularly in the southeast and extreme west, produce about half of the sugarcane and more than half of the bananas in The West Indies. The hillsides produce almost half of the citrus and coffee in the Federation as well as ginger, food crops, and some cacao. Cattle graze on areas too rough or rugged to cultivate. Coconuts are grown throughout the island, but particularly in the east and northeast.

The flat lands in the west of Trinidad produce one-fifth of the sugar in the Federation, while the humid hillsides produce three-fifths of the cacao, and almost half of the coffee and citrus. Food crops are grown extensively in the foothills in the north. Coconuts are grown mainly on the southwestern peninsula, on the coastlands of the north and east, and in scattered areas along the west coast.

Barbados produces slightly over one-fourth the total sugar crop in The West Indies, also food crops, and a little cotton.

The Windward Islands produce bananas, cacao, coconuts, citrus, spices, some sugar, Sea Island cotton, and coffee. From Grenada, the Federation's principal spice producer, come nutmegs, mace, cinnamon, and cloves. St. Vincent is the world's leading producer of arrowroot. Dominica is the principal exporter of limes and vanilla beans in the area. St. Lucia's most important cash crops are sugar and bananas.

The Leeward Islands grow one-tenth of the sugar and four-fifths of the Sea Island cotton in the Federation. Cotton for export and food crops for local use are grown on all of the Leeward Islands, but sugar is produced in sufficient quantity to export only in St. Kitts and Antigua. Additional export crops are coconuts from St. Kitts and limes, tomatoes, and vegetables from Montserrat.

Export Crops

Among the major crops in The West Indies grown chiefly for export, sugarcane predominates in area, production, and export value. Only a small quantity of citrus is shipped abroad as fresh fruit; the larger part is processed locally and exported mainly in the form of juices. In addition to the raw beans, some cacao and coffee are also exported in processed form.

TABLE 3.--Principal crops: Area, production, net trade, and quantity available for domestic consumption, 1956

Commodity	Estimated harvested area	Production	Net trade 1/	Available for domestic consumption 2/
	1,000 acres	1,000 short tons	1,000 short tons	1,000 short tons
Sugarcane	301.5	3/ 844.0	3/ - 810.0	3/ 34.0
Bananas	118.6	311.9	- 215.0	96.9
Cacao beans	123.5	16.1	- 13.4	2.7
Citrus fruit, fresh: 4/				
Grapefruit	10.9	40.1	- 8.7	31.4
Oranges	12.8	28.9	- 7.0	21.9
Limes	5.9	5/ 8.6	- .1	8.5
Coconuts (copra)	169.0	6/ 37.5	1.4	38.9
Coffee	25.9	6/ 6.6	- 3.8	2.8
Cotton	12.1	1.1	- 1.0	.1
Rice, rough	33.1	42.6	66.7	109.3
Spices:				
Ginger	1.0	.8	- .8	0
Nutmeg and mace	(7/)	2.1	8/ - 2.2	0
Pimento (allspice)	(7/)	2.5	- 2.5	0
Annatto	(7/)	.4	- .4	0
Arrowroot	4.7	5.1	- 5.0	.1

1/ Minus sign denotes excess of imports.
2/ No adjustments made for changes in stocks.
3/ Raw sugar. Fancy molasses not included.
4/ A large part of the citrus is exported as juice or canned segments.
5/ Dominica only.
6/ Estimated.
7/ Not available.
8/ Available from stocks.

Sugarcane.--In 1959 raw sugar and its byproducts, molasses and rum, accounted for roughly 23 percent of the total value of exports. Sugarcane is grown on all the islands, though only for local consumption in Nevis and used only for the manufacture of rum in Montserrat and Dominica. Jamaica, the largest sugar producer, accounts for an average of 45 percent of total production; Trinidad and Barbados alternate in second place.

The total area of sugarcane harvested in Jamaica, Trinidad and Tobago, and Barbados in 1959 was about 300,000 acres. A rough estimate for the other islands is about 35,000 acres. Production of raw sugar in 1959 (912,000 short tons) was more than double the 1935-39 average.

TABLE 4.--Sugar: Area of sugarcane, production and net exports of raw sugar, and quantity available for domestic consumption, averages 1935-49, annual 1950-59

Period or year	Area of sugarcane harvested 1/	Raw sugar: Production	Raw sugar: Net exports	Raw sugar: Available for domestic consumption 2/
	1,000 acres	1,000 short tons	1,000 short tons	1,000 short tons
Average:				
1935-39	(3/)	446	407	39
1940-44	(3/)	439	386	53
1945-49	(3/)	520	432	88
Annual:				
1950	218.2	727	620	107
1951	225.1	730	611	119
1952	228.6	741	614	127
1953	259.0	821	703	118
1954	274.0	871	772	99
1955	266.1	926	754	172
1956	265.4	844	810	34
1957	271.1	907	790	117
1958	4/ 284.0	844	707	137
1959	4/ 300.0	912	782	130

1/ Jamaica, Trinidad and Tobago, and Barbados only.
2/ No adjustment for changes in stocks.
3/ Not available.
4/ Preliminary.

Small farmers account for about half of the area reported, or for an estimated 86,000 acres in Jamaica and 42,000 acres in Trinidad. Farmers bring their cane to the factories to be ground, and are paid according to a sliding scale established by a government ordinance and based on the cost of grinding and market prices for the sugar and byproducts.

Expansion of the industry has been encouraged by an assured market in the United Kingdom since 1939, and still further by long-term arrangements, recently extended to 1965, under the Commonwealth Sugar Agreement whereby a quota at a negotiated price is allotted to each producing island; any amount in excess of this quota can be offered for sale at the world market price either in the United Kingdom and Canadian markets or in world markets. Further expansion of sugar exports from The West Indies, however, is limited by the global exports allotment to the British Commonwealth for its sugar-producing members and territories, under the International Sugar Agreement.

The increase in sugar production is attributed not only to an extension of the area under cane, but also to higher yielding varieties and improvements in field and factory production methods.

Sugarcane yields on the farms are much lower than on the estates, for example in Jamaica in 1956 the average yield of the farms was less than half the 37-ton yield of the estates. This wide variation may be caused by the combined effects of better natural fertility of estate lands in Jamaica, more use of fertilizer, and greater efficiency of large-scale production. However, every effort is being made by the island governments to increase the yields of the small farms.

Cane is planted chiefly during September-December, with short-season plantings during February-June. The harvest or grinding season begins in December and lasts until June unless delayed by rain.

Since 1947, special funds have been set up for the benefit of the sugar industry and the welfare of the workers. These funds are derived from a small levy on sugar exports except in Barbados where the levy is based on sugar produced.

At present Jamaica has 20 sugar mills, Barbados 26, Trinidad 6, Antigua 2, St. Kitts 1, St. Lucia 3, and St. Vincent 1. For greater efficiency, the number of mills has been gradually reduced, mainly through amalgamation, in favor of larger mills with greater grinding capacity.

Sugar exports--totaling 707,000 short tons in 1958 and about 782,000 tons in 1959--go almost entirely to the United Kingdom and Canada. Production and exports in 1958 were greatly reduced by drought and strikes in Jamaica and Barbados. Trinidad experienced a severe drought and low production in 1959.

Rum is the more important of the two byproducts of sugar. In 1958, Jamaica, Trinidad, and Barbados together earned about $10.3 million from rum exports and $4.9 million from molasses. The rum goes mainly to the United Kingdom and Canada. The United States receives the bulk of the molasses shipped from Jamaica, and of the inedible molasses from Barbados. Trinidad's molasses goes chiefly to the United Kingdom and Canada.

Bananas.--Bananas, the second most important export crop in The West Indies, occupied an area roughly estimated at 125,000 acres in 1958. They are grown on both estates and small holdings. They are planted in pure stands and as subsidiary crops as a protection to young cacao, citrus, and nutmeg trees in rehabilitated and newly planted areas; at the same time bananas serve as a cash crop. The fruit is harvested 10 to 12 months after planting. Each stem which we know as the plant bears only once, but several suckers spring up from the base, and they are usually pruned to one stem for the next crop. Selection in pruning determines the time between crops. The variety Gros Michel, has been replaced by Lacatan on most of the islands.

More than half of the banana crop is grown in Jamaica on approximately 100,000 acres on the coastal plains and in the interior valleys. Dominica was the next largest producer for export until 1959, when it was surpassed by St. Lucia and St. Vincent.

Banana exports from The West Indies amounted to 518.0 million pounds in 1959 compared with 667.2 million pounds before World War II.

TABLE 5.--Bananas: Exports, average 1935-39, annual 1955, 1957-59

	1935-39 average	1955	1957	1958	1959
	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.	Mil. lb.
Jamaica	652.1	305.1	318.4	279.0	290.9
Dominica	2.9	32.5	38.3	43.7	56.9
St. Vincent	1.4	3.0	36.0	35.6	59.5
St. Lucia	3.2	12.8	25.3	28.9	68.3
Grenada	3.9	2.5	17.5	26.1	33.5
Trinidad and Tobago	3.7	2.8	10.0	9.9	8.9
Total	667.2	358.7	445.5	423.2	1/518.0

1/ Preliminary.

Jamaica contributed 56 percent of the total in 1959 as compared with almost 98 percent in the prewar period. In 1938, Jamaica was the largest banana exporting country in the world. The industry was gravely affected by the cessation of shipments during the war and by the ravages of Panama disease. It revived with the replanting of disease-resistant Lacatan but was set back by the 1951 hurricane and again by drought in 1958. Cultivation was somewhat restricted by expansion of the area planted to sugar in 1957 and again in 1958.

In Trinidad and the Windward Islands banana production has increased rapidly since 1955. Plantings have been extended under the stimulus of contracts with firms which insure shipping and marketing facilities. Bananas are now Dominica's chief crop. In 1957 they replaced sugar as the major product in St. Lucia, and in 1958 they replaced arrowroot as the first crop in St. Vincent. In Grenada, expansion of banana production has helped to maintain the economy following the 1951 hurricane which destroyed the nutmeg trees, and severely damaged the cacao trees, the two principal export crops.

Steady improvement is being made in handling techniques to insure arrival of the fruit in the United Kingdom without deterioration.

In 1955, a price assistance scheme was agreed upon by the United Kingdom Government and a delegation of the Regional Economic Committee to assist the banana industry in The West Indies. The plan, which expired in March, has been extended another year. A commission of inquiry, appointed by the Jamaican Government to study the banana industry in the island, recommended that the plan (or scheme) in its existing form be discontinued and a price equalization plan, less difficult to administer, be considered. Also, as a result of the commission's report, the government is considering steps to increase the efficiency of the industry.

Citrus.--Citrus cultivation has been expanding in The West Indies, particularly since 1950. This expansion has stemmed from a protected market in the United Kingdom where import quotas are placed on U.S. orange and grapefruit products and fresh winter grapefruit. The islands consider their output to be noncompetitive in the world market. In 1957 the area planted in citrus was estimated at 45,000 acres, or 2 percent of the agricultural area. The principal producing areas are the parishes of St. Ann, Manchester, Clarendon, and St. Catherine in Jamaica, and the counties of St. Patrick, St. George, and Victoria in Trinidad.

Ordinary seeded oranges are grown in nearly every island. Improved varieties of oranges and grapefruit have been planted commercially in Jamaica, Trinidad, and Dominica. Oranges are produced primarily on small farms and may be grown alone or interplanted with other crops such as coffee. Grapefruit trees, however, are planted mostly in large groves.

Limes are grown in Dominica on the hillside terraces and on some of the more gentle slopes. In Jamaica, they are grown on rough pastures and are interplanted with coconut trees. In Trinidad, limes are produced mainly by small holders as a cash crop, but there are a few large pure stands. Because of substantial losses in Trinidad through die-back disease, budded limes on a highly resistant root-stock have been planted on a fairly large scale in the districts of Erin, Mayaro, and Toco.

In 1958 commercial production of citrus for The West Indies, represented by deliveries to the principal packers and processors, was 57,604 short tons for grapefruit and 34,907 tons for oranges. This exceptionally high output was due to record crops in Trinidad. However, drought that year reduced the island's citrus production by half in 1959. Jamaica's citrus production increased in 1959 but the local market absorbed a large part of the increase. The Federation's average production for the 1953-57 period exceeded the prewar (1935-39) average by 135 percent for grapefruit and 50 percent for oranges.

Under the stimulus of a 10-year contract ending in 1960 with the United Kingdom Government for concentrated orange juice, the Citrus Growers' Association in Jamaica started a program to expand orange production. Nearly 17,000 acres were planted by the end of 1957, mainly of the Valencia variety. The number of nonbearing grapefruit trees is small. Limes, though produced in fairly large quantities, are much less important in Jamaica's economy than are oranges and grapefruit.

In Trinidad, citrus plantings have been encouraged on land considered unsuitable for cacao, by offering grants and free seedlings under the Cacao Rehabilitation Program of 1948. As elsewhere in the islands, the rate of planting has been less for grapefruit than for oranges.

Citrus is produced largely for export, local consumption being estimated at 39,000 short tons in 1956. The local Citrus Growers' Association makes its own foreign trade arrangements for its members. Exports of citrus juices from The West Indies have increased 5 to 6 times over the prewar averages, while those of fresh oranges and limes have decreased. Fresh grapefruit exports have increased only 5 percent because of the growing shipments of canned segments, but a further increase of 55 percent in 1958 was due to a record crop in Trinidad.

Jamaica's exports of fresh citrus are decreasing as more fruit is exported in processed form. The processing has been rapidly changing from pulp to grapefruit segments and juice. The Citrus Growers' Association, with its 46,000 members, has the exclusive right to export fresh fruit. About 45,000 members each deliver an average of 8 boxes of fruit every season. The United Kingdom and New Zealand take most of Jamaica's citrus fruit and products.

In 1957 Trinidad's exports of citrus fruit and juices were almost double the 1935-39 average. Only 30 percent of the fruit delivered is packed for export, the rest is processed. The greater part of the exports of fresh grapefruit and citrus juices go to the United Kingdom; most of the oranges and limes and a good share of the juices go to the neighboring islands.

Jamaica has several processing plants for citrus products. Trinidad has one for citrus juices. Dominica has a number of small and large plants for lime juice and several small plants for processing lime oil and canning grapefruit segments. Jamaica and Trinidad also produce lime oil and have a plant to convert citrus waste into livestock feed.

Cacao.--Although cacao occupied slightly over 7 percent of the country's total agricultural area, it was displaced by citrus in 1957 as third in importance among the West Indies crops. More than three-fourths of the cacao area is in Trinidad and Tobago, where it now ranks next to sugar. The second largest producer, Jamaica, accounts for about 12 percent of the cacao area. Other producing islands in order of importance are Grenada, St. Lucia, Dominica, and St. Vincent. The crop is grown by both small growers and estates.

Production in 1958 was 14,630 short tons--1,500 tons higher than the previous year--but it dropped in 1959 because of drought in Trinidad, and in spite of increased production in Jamaica where 1950 plantings were beginning to bear. Production in 1958 was about 30 percent below the 1935-39 average. Over 13,000 tons of cacao beans were exported in 1958 and 1959 in raw or processed form. The industry has long been declining because of age of trees, disease, and low prices. To stop the decline of the industry in Trinidad, fertilizer, and heavy-bearing clones with a high degree of resistance to

TABLE 6.--Citrus: Exports of fresh fruit and juices, [1] average 1935-39, annual 1955-58

Year	Fresh fruit				Juices			Canned grapefruit segments
	Grapefruit	Oranges	Limes	Other citrus	Grapefruit	Oranges	Limes	
	Short tons	Short tons	Short tons	Short tons	1,000 U.S. gallons	1,000 U.S. gallons	1,000 U.S. gallons	Short tons
Average:								
1935-39	7,912	12,248	254	(2/)	486	493	241	0
Annual:								
1955	9,837	5,539	66	1,271	2,529	2,752	1,110	3,999
1956	8,618	6,992	58	1,031	2,426	2,542	958	2,921
1957	8,295	5,291	54	1,241	2,642	2,237	987	4,314
1958	12,898	4,764	41	1,242	3,244	3,161	1,436	4,740

[1] Exports of principal producing areas, Jamaica, Trinidad and Tobago, and Dominica.

[2] Not available.

to witches' broom, have been distributed to the growers. Also, higher prices since 1948 have aroused interest in increased plantings in the islands.

In 1957 and 1958 most of the Jamaican crop was exported in processed form, but this situation was reversed in 1959 when exports of raw beans greatly exceeded the processed product. In Trinidad, an all-electric drier has revolutionized cacao bean processing, making it independent of the weather, reducing drying cost, and it is reported, improving the quality.

The bulk of the cacao exports from Trinidad go to the United States (58 percent in 1958 and 1959) and the United Kingdom (about 18 percent). Shipments from the other islands go mainly to the United Kingdom.

Coffee.--Coffee, a minor crop in the Federation, occupies an estimated 26,000 acres of land of which 19,000 acres are in Jamaica and 7,000 acres are in Trinidad. There are numerous coffee trees interplanted with cacao in Trinidad and Tobago but the acreage would be difficult to compute. There is a very small planted area in St. Vincent and in Dominica.

Coffea arabica is grown in Jamaica; the Blue Mountain variety is grown above 2,500 feet and there is the ordinary or lowland variety. In Trinidad, C. robusta (Robusta coffee) is grown for export and C. arabica (Arabica coffee) chiefly for local consumption.

Most of the Federation's coffee is produced for the export trade, but an increasing proportion of Jamaica's crop is consumed locally (about 650 tons in 1959) and about one-fifth of the crop is exported in processed form. Federation exports of 4,050 tons of raw coffee in 1959, though higher than in 1958 (3,453 tons), are below the prewar level of 4,900 tons. Jamaica's production and exports were reduced by drought in 1957, 1958, and the first part of 1959. On the other hand, exports of raw coffee from Trinidad have increased steadily since World War II.

All of Jamaica's raw coffee for export, other than Blue Mountain coffee, is purchased by the Coffee Industry Board, which regulates the growing, processing, purchasing, and sale of coffee, and encourages the development of the industry. The quality of Jamaican coffee has greatly improved until it now ranks with the world's best. Blue Mountain coffee is processed by the estates which buy the cherry from the small coffee growers. Trinidad's coffee is planted under subsidy as an alternative crop on land considered unsuitable for cacao.

Cotton.--Cotton is a minor crop in The West Indies as a whole, but it is the main crop of small farmers in the Leeward Islands. The total area harvested in 1959 was 11,539 acres; 10,039 acres were in Sea Island cotton, an annual, and the rest was in Marie Galante, a perennial cotton. The area in Sea Island cotton varies widely from year to year, largely in response to price.

The areas of largest cotton production are in Antigua, Montserrat, Nevis and St. Vincent. The 1958-59 cotton production in Antigua was roughly one-fourth that of the previous year as some of the larger estates have given up planting it. In most of the other islands, production has been falling off so that the total output of 1.7 million pounds of cotton was 15 percent below the prewar average. The 1959-60 crop is expected to be still smaller as Antigua and Montserrat have further reduced their cotton acreage.

The West Indies exports most of its cotton and imports the medium-staple upland types used by the domestic cotton textile industry. Exports averaged about 1.9 million pounds a year from 1952 to 1956 and imports averaged about 1.3 million pounds. Exports go to the United Kingdom and the United States and are handled by marketing boards established by the local governments. In 1958, exports totaled 2.8 million pounds, but dropped by almost half in 1959.

All the cotton is ginned and baled locally. Several gins are operated by individuals on some of the islands, but there are also centralized gins under government control in all cotton-growing territories.

Spices.--Spices have long been important in the trade of The West Indies. The principal ones are pimento (known in the retail trade as allspice), ginger, nutmeg, and mace.

Allspice is the unripe fruit of the pimento tree (Pimenta officinalis). The fruit is gathered and dried in the sun to produce the aromatic spice. The leaf is used in the manufacture of pimento oil for export. Jamaica is the world's largest commercial producer of allspice. The trees grow most densely in the grasslands in the limestone area of the parishes of Manchester and St. Ann. They begin to bear when 7 or 8 years old, continuing for 60 to 70 years. The crop is harvested from July to October.

The bulk of the island's allspice production is exported. The 1959 crop was the largest for some years, but the exports of 3.7 million pounds were 1.4 million pounds less than in 1958 when a significant quantity of the exports was from stocks. Fluctuation in production is frequently due to heavy rains that prevent setting of the berries, to rust disease, and to the practice of breaking the branches when harvesting the fruit. The three largest markets for allspice are the United Kingdom, the United States, and the Federal Republic of Germany.

Ginger is grown only in Jamaica, in the elevated areas on fairly small holdings. Jamaica ginger is the spicy root-stock of Zingiber officinale. It is planted in March and April and harvested in the following February and March, and the ratoon crop in December.

In recent years the bulk of the crop has been produced in the districts of Christiana (Manchester parish), the Dry Harbor Mountains (St. Ann), and Seaford Town (Westmoreland). Exports represent almost all of the island's production. When the price declined in 1953 from 53 to 8 cents a pound, production dropped from 2,200 to 880 tons in 1954 as farmers abandoned the crop. The price rose sharply in 1955 and continued to rise in 1957, falling in 1959 because of large supplies from Africa and India. The government assisted the growers by purchasing a part of the crop. Production and exports totaled 1,036 tons in 1959, but were still well below pre-1954 levels.

The bulk of the crop goes to the United Kingdom, the United States, and Canada. Ginger is marketed by the individual Jamaican producers through their importers in New York and elsewhere.

Nutmegs and mace are the product of the same tree, Myristica fragans; the nutmeg is the seed, and the mace the netlike covering surrounding the seed. Nutmegs are grown on a large scale only in Grenada, minor quantities are produced in Trinidad, St. Vincent, and St. Lucia. The crop is raised mainly on the slopes of mountains above the levels at which cacao is normally grown, though some nutmegs are grown with cacao in mixed cultivation.

Grenada's production in 1955 was 3,000 short tons of nutmegs and over 340 tons of mace. The 1955 hurricane destroyed an estimated 70 percent of all the trees on the island. It will take 7 to 8 years for new trees planted from seed to bear and about 15 years to get full production. To restore production as soon as possible the Department of Agriculture is conducting experiments with rooted cuttings, which are encouraging and, if successful, will mean a first crop within 18 months of planting.

In 1957 the small Federation exports of 273 short tons of nutmegs and 79 tons of mace were a direct result of the hurricane that hit Grenada. However, the industry is recovering and total exports in 1958 were 876 tons of nutmegs and 109 tons of mace. The United States and the United Kingdom are the largest markets for these two spices. In Grenada, deliveries of the nutmeg and mace crop are made to the Cooperative Nutmeg Association, which is the sole buyer and exporter.

Arrowroot.--Production of arrowroot, Maranta arundinacea, in The West Indies is confined almost exclusively to St. Vincent which produces a large share of the world's supply. Until 1957, when bananas took over first place, arrowroot was the island's main export and in 1953 occupied an area estimated at 4,500 acres. Output, which reached a peak of 5,100 short tons in the crop year ending 1956, declined to 3,500 tons in 1959 as the more profitable banana was substituted for arrowroot. The 1960 crop is expected to be higher.

It is an 11-month crop planted in May when the wet season begins and harvested from November until April. Successive crops may be harvested for 6 years before the land is completely cleared and rested. Arrowroot is grown on the hillsides; on estates it is rotated with sugarcane with which it is complementary. Complete fertilizer is applied as a side dressing 3 months after planting. In the mountains, growth is restricted by a root disease known as "burning;" excessive moisture helps spread this disease. In 1958, 4,100 short tons of arrowroot were exported. Starch from arrowroot is processed by privately-owned factories and one new central factory equipped with modern processing machinery installed by the government. Most of the starch goes to the United States.

Tobacco.--Tobacco exports were once a large income earner for Jamaica; however, total tobacco leaf production has been declining since the postwar peak reached in 1947. About 1,000 acres of Havana and 130 acres of Virginia tobacco are grown. The greater part of the leaf supply is consumed locally, mainly as cigarettes. Exports of cigars are modest, amounting to 104,500 pounds in 1959 and going mostly to the United Kingdom. Over 1.5 million pounds of leaf are imported--mostly from Canada--to manufacture cigarettes and for cigar wrappers.

Annatto.--Jamaica is the world's largest producer of annatto, *Bixa orellana*, a reddish-yellow dyestuff, but interest in its production is declining with the increasing importance of synthetic coloring. Because of its special qualities in the manufacture of certain products such as butter, oil, and margarine, however, annatto will always find a market. Exports in 1958 were 326 short tons, 33 percent went to the United States which, together with the Netherlands, takes most of it.

Crops for Domestic Consumption

The federated islands are dependent on imports for a great part of their food supply. The principal food imports are flour, meat, dairy products, cereals, and vegetables. However, some meat and vegetables are produced locally and there is some trade in root crops and fresh vegetables between the islands. Local governments try to keep down the prices of basic foods such as rice, and especially those for which there is no substitute such as flour and salt fish, subsidizing these items when necessary.

Estimates of sugar consumption are made annually for each island and its dependencies, and each factory is required to withhold from export an assigned portion. Banana culls and rejects fill part of local needs, and some varieties which cannot stand up under the rigors of shipping are grown for local consumption.

Coconuts.--The coconut industry is extensive and supplies one of the principal food staples of the Federation. Coconuts rank next to sugarcane in acreage, occupying 8 percent of the total agricultural area. Small farmers usually grow a few trees, and estates devoted primarily to some other crop may have a part of the land in coconuts. In addition, a large number of estates and plantations produce coconuts as the sole or principal crop.

About 60 percent of the Federation's total coconut area is in Jamaica and 25 percent is in Trinidad. Other producing areas, in order of their importance, are St. Lucia, St. Vincent, Grenada, and Dominica. Some islands have an extensive area in young trees.

Total production of nuts for The West Indies is not known, but production of copra in 1958 was estimated at 38,000 short tons, of which Jamaica and Trinidad produced about 80 percent. The 1959 output is estimated to be lower. Production of nuts in Jamaica, set back by the 1944 and 1951 hurricanes, plant disease, and the severe 1956, 1957 and 1958 droughts, is still below prewar levels. Like Jamaica, Grenada's production is still below the prehurricane level, but both islands have coconut rehabilitation schemes and extensive plantings are being made. Trinidad's coconut industry has suffered an estimated 12 percent decline in production as a result of severe droughts in 1958 and 1959 and an attack of Red Ring disease.

A considerable number of coconuts are used in the fresh state for cooking and for the coconut "water" (liquid in the green nut), but the principal use is for copra for the local fats and oils industry in many of the islands.

Exports are in the form of fresh coconuts, copra, and refined or unrefined oils and go almost entirely to the other islands of The West Indies and British Guiana. Under the Fats and Oils Agreement, renewed in 1959, between the governments of these islands and British Guiana, all coconut products--copra, fats, oils, soaps, etc.--may not be exported outside their territories except in case of surplus, nor may they be imported unless supplies are not available within the agreement area. Prohibited imports include other oils and fats which may compete commercially with the local product.

The principal exporting islands are Trinidad, Dominica, and St. Lucia. Barbados grows no coconuts but imports copra from the other islands for processing into oils, margarine, fats, and soap for local use and re-export within the islands.

Since 1944 Jamaica has had to import copra and unrefined oil to meet its full domestic requirements. Increasing population and wider industrialization have been responsible for expanded local demand for coconut products.

Most of the coconut-growing islands now have factories to dry and process the copra. Coconut grower associations have been formed and the government is encouraging them, with tariff protection and other assistance, to develop these processing industries. However, copra output still does not meet all the needs for fats and oils in The West Indies and British Guiana, and fats and oils imports from outside the region are made to supplement local production.

Rice.--Rice is one of the staple foods of The West Indies, especially in Trinidad, where 35 percent of the population is East Indian. The total area under rice, estimated at 31,000 acres in 1958, is divided between Jamaica and Trinidad, the only two islands producing it in any significant quantity. Total production dropped in 1958 to 18,200 short tons of milled rice but rose to 20,000 tons in 1959 which was more than 3 times higher than the 1935-39 average of 6,600 tons. This increase has served to curb the mounting rice imports as demand has risen with the rapidly expanding population. In 1958 consumption of rice in the Federation was over 94,000 tons of which 81 percent was imported.

Except in limited areas, Jamaica is not ideally suited to rice growing and, as there is a close and ready supply from British Guiana, the Agricultural Development Corporation has discontinued its efforts to make the island self-sufficient. In Trinidad, rice is grown mainly on small holdings by East Indians. It is estimated that more than one-third of the island's requirements are produced locally. Survey work is being continued in two of the island's swamp areas, Caroni and Nariva, where it is believed that the soil might be suitable for rice. Rice is planted from April to August and harvested from December to February, with a small early crop in October.

Rice imports for The West Indies in 1958 totaled 76,400 short tons (milled), exceeding the previous year's total by 13,000 tons because of the low production of both rice and vegetables. The bulk of the rice imports usually come from British Guiana. The West Indies has had a regional agreement with British Guiana since 1947, to purchase all its rice for local consumption at fixed prices. However, when British Guiana is unable to meet the demand, supplies are obtained from Thailand, the Netherlands, the United States, and elsewhere. Trinidad and Tobago received 41 percent of the total rice imports in 1958, Jamaica 36 percent, Barbados 13 percent, and the Leeward and Windward Islands 10 percent.

Pasture grasses.--The importance of feed in livestock improvement has been demonstrated and stressed at the various agricultural and livestock stations established in the islands. The fact that grass is a crop is rapidly being realized by both small and large farmers. Among the many grasses tried, the two highest yielding sward types are Pangola Grass (*Digitaria decumbens*) and Coastal Bermuda grass (*Cynodon dactylon*). The results of trials show that Pangola is superior in nutritional value to Coastal Bermuda grass.

Pangola grass has been planted throughout the cattle-raising areas of Jamaica. It has achieved great success in the increased yields of beef and milk per acre of pasture. This has been done with no supplementary feed such as silage, hay, or concentrates.

Pangola grass is grazed only and is not cut for hay. It is also being established in the other islands of The West Indies as a result of the work in Jamaica. Generally speaking, however, pasture management and development of livestock have not made very great progress in the other islands.

Other crops.--A large variety of vegetables are grown throughout the islands, though not in sufficient quantity to satisfy local requirements in all the islands. The World Bank Mission in its report on Jamaica stated that the value of produce grown and consumed locally in the island was probably two or three times the value of all its agricultural exports.

Potatoes, which are in greatest demand, are grown only in Jamaica. They have become an important article in the island's food and are among the few crops produced for the local market which can be stored for some time. However, the supply being insufficient, Jamaica imported about 6,400 short tons in both 1958 and 1959. Trinidad imported 12,000 tons in 1958, and some of the other islands imported small quantities. Imports come mostly from Canada, the United Kingdom, and the Netherlands.

Tomatoes once flourished in St. Elizabeth, Jamaica, but the crop has declined because of drought, blight, poor yields, and poor quality. This crop grows well in Montserrat where production is being increased for export to the other islands.

Jamaica and the other islands grow some corn, but, to meet local requirements, had to import over 18,000 tons of corn and 6,000 tons of cornmeal in 1958 chiefly from the United States, Canada, and the Union of South Africa. Other crops include plantains, pumpkins, cassava, breadfruit, sweetpotatoes, yams, and other tubers known as tannias, dasheen, and eddoes. Trinidad imports some of these crops from the neighboring islands, sweetpotatoes and yams especially from Barbados and St. Vincent. Over 8,000 tons of pulses are imported annually for The West Indies, chiefly from the Netherlands, Australia, and the United States; and about 6,500 tons of onions were received in 1958, principally from the United States, Canada, the Netherlands, and Madeira.

The island governments continue to encourage growing root and green vegetable crops, in order to reduce imports of these items.

Local fruits such as mangoes, avocados, cashews, and tamarinds are plentiful.

Livestock and Products

Some cattle and other livestock are raised throughout The West Indies, but none of the islands has developed a livestock industry comparable to that of Jamaica, which has engaged in commercial cattle raising for many years. Animals are still used to some extent on sugar estates and plantations: cattle for hauling and transport, horses for riding, and mules for pack transport. Donkeys are used by small-scale farmers for pack transport and riding to market. Some estates maintain a large herd of dairy cattle. The smaller animals--sheep, goats, hogs, and poultry--are raised largely by small-scale farmers.

Jamaica has about 550 ranches, called pens, which occupy large areas of the limestone plateau and the interior basins. In 1956 it accounted for 70 percent (248,000) of the cattle population of The West Indies, 62 percent (152,000) of the hogs, and 80 percent (350,000) of the goats. While the number of draft animals in Jamaica remained unchanged between 1943 and 1956, the rest of the livestock increased, except hogs which decreased. High feed prices are a serious handicap to hog raising. In 1956, Trinidad had 42,000 cattle and 36,000 hogs which represented a slight increase in number since 1946; other livestock and poultry declined.

In Trinidad the climate is not suited to certain types of livestock, but Tobago's climate seems more favorable. Here, most livestock are kept by small farmers who also grow crops. In Barbados the government is trying to improve the livestock by importing breeding stock. It is also furnishing free food to brood sows and young pigs. Here, the typical pattern of livestock raising is one of small holdings with individual small farmers owning and raising one or two sheep, and several goats which supply meat and milk to their owners. As grazing land is limited, the problem of feed is one of major importance and expense to all livestock owners.

Most of the cattle in The West Indies are Indian Zebu mixed with many other types which have been imported at various periods. Recent importations have mainly been Holstein (from Canada), Jersey, and Shorthorn, though Red Polls, Brahman, Angus, and in certain areas, Sussex, and Herefords have also been used. In the case of hogs, it would be difficult to decide what types are basic, but in recent years there have been frequent importations of Large Blacks and Berkshires, both of which appear to do well. The breeds of goats raised are British Alpine, Anglo-Nubian and Berkshire; and of sheep, Suffolk and Black Belly.

The dairy cattle developed at Bodles Pen, Jamaica's Cattle Breeding Center, are the Jamaica Hopes, which have evolved from the original foundation herd of Jamaica Jerseys. The breed has made excellent progress and some grade animals have been exported to Grenada, St. Vincent, and Dominica. Jamaica has developed two beef breeds--Jamaica Red and Jamaica Black--both of which have given excellent results.

The local demand for fresh meat, poultry, eggs, and milk is increasing steadily as consumer purchasing power and standards of living rise. Total meat consumption for the Federation in 1955 was estimated at over 94 million pounds (carcass weight). About half of this amount was imported. In 1958 Jamaica, Trinidad and Tobago, and Barbados imported about 67 million pounds of meat including poultry (carcass weight), of which 24 million pounds were fresh. Pork and beef are the most widely consumed meats. Goat meat is well liked by the East Indian population, and is eaten extensively in Jamaica where 230,000 goats were slaughtered for meat in 1957. A regular supply of mutton from local slaughter is supplemented by imports of fresh meat.

Salted pork and salted beef are widely used throughout the Federation because of their keeping qualities. Imports of these have increased steadily amounting to 8 million pounds in 1958 for Jamaica and Trinidad and Tobago. Salted pork and beef form the principal meat imports of the other islands.

Poultry imports rose from 3 million pounds of fresh meat in 1957 to 5 million pounds in 1958 and about a million pounds more in 1959 for Jamaica and Trinidad and Tobago. The poultry industry continues to expand rapidly in Jamaica and poultry imports now require a license. Imports of baby chicks and poultry feed also have increased. Poultry farmers in Trinidad and Tobago formed a poultry producers cooperative in 1958, with a view to organizing the small but growing poultry industry of the island. The aims of the cooperative are to purchase supplies and help members improve their stock and market their produce. Production is increasing at a slower rate than demand, and imports continue to rise.

The West Indies depends on imports for the greater part of its processed milk, butter, and cheese. Plans are underway to decrease milk product imports by increasing local output, but production costs are still too high for milk to be sold in large quantities. Excluding the Windward and Leeward Islands, total Federation imports of processed milk in 1958 were 11,000 short tons of condensed and evaporated milk and 7,000 tons of dried milk. The former came principally from the Netherlands, the United Kingdom, and Australia, the latter from New Zealand, Denmark, the United States, and the Netherlands.

In Jamaica, the dairy industry expanded rapidly with the opening of a condensery in 1940. The opening of the factory caused a changeover from beef to dairy cattle, which contributed to the rapid expansion in milk production.

In 1956, 9.7 million quarts of milk were delivered to the condensery. Plans are underway to construct a milk plant in Trinidad and the government has announced plans for initiating dairy cattle experimental plots in the vicinity. Goats' milk is consumed fresh and as cheese.

The West Indies imported over 4,000 tons of butter and 2,500 tons of cheese in 1958, principally from New Zealand and the Netherlands. Many of the islands in the Federation must import eggs to meet local demands. Total Federation imports of eggs in the shell are estimated at over 6 million, and come mainly from Canada, Ireland, and Australia. Dried eggs are supplied chiefly by Australia and the United States. Jamaica's egg imports have dropped sharply since 1957 as a result of the rapid rise in egg and poultry production, encouraged by the availability of refrigerated storage facilities.

Trade in Agricultural Products

Agricultural trade of the Federation has increased considerably since World War II, but its relative importance to total trade has decreased. On the export side this decrease in the share of agricultural trade reflects the large exports of bauxite and alumina from Jamaica to the United States and Canada and large oil shipments from Trinidad. On the import side purchases of machinery and equipment for new industries have risen sharply.

Total trade.--The West Indies usually has a trade deficit which is compensated for by income from the tourist industry. Jamaica's receipts from tourists in 1958 were estimated at nearly 29 million dollars. Grants-in-aid are made by the United Kingdom Government through the Federal Government to the smaller islands to help them balance their budget.

Agricultural exports represent about 40 percent of the Federations's total export value and range from close to 15 percent in Trinidad and Tobago to over 95 percent in the Leeward Islands. Jamaica accounts for about half of the agricultural exports and, together with Trinidad and Tobago and Barbados, accounted for 86 percent in 1955 and 1956.

The United Kingdom is the principal market for the Federation's agricultural exports, taking about 60 percent, followed by Canada with 16 percent and the United States 6 percent. New Zealand and Australia are minor markets.

Agricultural imports into The West Indies are less than 20 percent of total import value, but the percentage varies between islands. For example, they account for one-third of Barbados imports. About three-fourths of the total value of agricultural shipments to The West Indies are food. Approximately 60 percent of the imports of wheat flour comes from Canada and more than 30 percent from the United States. New Zealand is the principal supplier of frozen and processed meats. The United States, Canada and the United Kingdom are also important suppliers.

Trade with the United States.--The West Indies is a growing market for U.S. commodities. This growth is evidenced by an increase, since 1955, of 77 percent in the value of U.S. exports, which reached $74 million in 1959; and an increase of 68 percent in the value of agricultural exports, which was

TABLE 7.--Principal agricultural exports (including re-exports): Value, by area, 1955 and 1956

Commodity	Jamaica		Trinidad and Tobago		Barbados		Windward Islands		Leeward Islands		Total	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
Agricultural:												
Sugar & byproducts	34,617	39,849	18,830	15,706	19,771	17,659	1,126	1,080	6,156	7,837	80,500	82,131
Bananas	13,976	16,942	92	294	0	0	1,911	3,284	0	0	15,979	20,520
Cacao and preparations	2,167	1,419	6,865	6,116	18	0	2,836	555	0	0	11,886	8,090
Coffee and preparations	2,952	2,970	1,030	941	16	0	0	0	0	0	3,998	3,911
Citrus fruit and products 1/	3,656	3,985	1,709	1,496	0	0	474	378	7	7	5,846	5,866
Spices	2,761	4,428	15	35	0	0	2,356	2,515	0	0	5,132	6,978
Coconuts and products	2	2	1,063	554	66	0	1,090	831	0	0	2,221	1,387
Cotton and by-products	0	3	0	0	1	1	209	148	1,342	1,056	1,552	1,208
Arrowroot	0	0	0	0	0	0	1,066	1,031	0	0	1,066	1,031
Essential oils 2/	476	487	23	57	0	0	217	170	0	0	716	714
All other	2,484	2,859	1,694	1,857	826	1,117	415	947	1	43	5,420	6,823
Total agricultural	63,091	72,944	31,321	27,056	20,698	18,777	3/11,700	3/10,939	4/7,506	4/8,943	134,316	138,659
Nonagricultural	27,186	33,500	134,150	164,434	1,833	2,221	680	665	1,006	415	164,855	201,235
Total exports	90,277	106,444	165,471	191,490	22,531	20,998	12,380	11,604	8,512	9,358	299,171	339,894
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Share of agricultural in total exports	69.9	68.5	18.9	14.1	91.9	89.4	94.5	94.3	88.2	95.6	44.9	40.8

1/ Except citrus oils.
2/ Mostly citrus oils.
3/ Includes only principal exports for Dominica.
4/ Excludes minor agricultural exports.

Note: Values converted to U.S. dollars at U.S.$0.58 = BWI $1.

TABLE 8.--Principal agricultural imports: Value, by area, 1955 and 1956

Commodity	Jamaica		Trinidad and Tobago		Barbados		Windward Islands		Leeward Islands		Total	
	1955	1956	1955	1956	1955	1956	1955	1956 1/	1955	1956	1955	1956
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
Agricultural:												
Wheat flour	6,619	7,694	5,968	5,665	1,098	1,121	1,902	1,346	795	807	16,382	16,633
Rice	2,758	1,864	2,739	2,647	1,262	1,144	402	260	428	433	7,589	6,348
Other grains and preparations	1,321	3,203	1,289	1,300	475	2/ 224	235	233	165	170	3,485	5,130
Meat and preparations	2,353	3,129	4,377	4,963	1,514	1,253	229	277	335	215	8,808	9,837
Milk, condensed and evaporated	1,370	1,909	2,169	2,438	786	837	153	161	0	0	4,478	5,345
Other dairy products	1,985	3,187	3,598	4,093	463	531	233	316	206	230	6,485	8,357
Vegetables and preparations	1,089	954	2,392	2,429	655	0	151	166	0	0	4,287	3,549
Feeds and fodders	711	730	1,441	1,643	1,513	1,290	81	84	0	0	3,746	3,741
Fruits, nuts and preparations	564	528	895	926	452	0	53	74	0	0	1,964	1,528
Tobacco, manufactured & unmanufactured	1,317	1,140	1,232	1,306	245	0	302	226	46	52	3,142	2,724
Cotton, unmanufactured	637	592	131	153	5	0	0	0	0	0	773	745
Fats and oils	10	13	30	12	0	0	327	331	289	188	656	544
All other	3,404	2,459	3,532	4,111	2,090	5,186	677	703	47	53	9,750	12,512
Total agricultural	24,138	27,402	29,793	31,686	10,558	3/11,586	3/4,745	3/4,177	3/2,311	3/2,148	71,545	76,999
Nonagricultural	103,014	134,938	140,938	143,190	21,484	23,977	11,763	11,554	9,788	10,446	290,123	324,105
Total imports	127,152	162,340	170,731	174,876	32,042	35,563	16,508	15,731	12,099	12,594	361,668	401,104
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Share of agricultural in total imports	19.0	16.9	17.5	18.1	32.9	32.6	28.7	26.5	19.1	17.1	19.8	19.2

1/ Dominica imports not available.
2/ Cornmeal and cornflour only.
3/ Excludes minor agricultural imports.

Note: Values converted to U.S. dollars at U.S.$0.58 = BWI $1.

$17.6 million in 1959. There were only five of the Latin American Republics that took more U.S. agricultural exports in 1959 than The West Indies. U.S. agricultural exports to The West Indies are mainly food items, the principal ones being wheat flour and meat and meat products.

Total U.S. imports from The West Indies have increased over the years also, although the total of $93 million in 1959 was a 9 percent decline from the previous year. Most of the trade is in nonagricultural items, but the United States imports from The West Indies some coffee, cacao, spices, and arrowroot.

Outlook

Agricultural production is expected to increase over the long range in spite of the fact that the land area is limited and is subject to drought and hurricane which may wipe out 20 to 40 percent of a crop. Expanded agriculture, however, will vary from one island to another depending on the amount of unused arable land and the adoption of improved farm practices. One favorable factor is the political stability of government. As a result of development programs in most of the islands, agricultural practices are being improved, farm areas made more accessible, and natural disasters were turned to good account in providing the opportunity to introduce better methods and some diversification. Land is being made available to farmers through land settlement programs in Jamaica, Trinidad, and other islands.

In Jamaica agricultural output is being increased as more land is brought under cultivation by irrigation, drainage, and land reclamation and as the productivity of small farms is increased by improved practices. New land legislation in Jamaica will encourage the use of lands now idle, thereby increasing the agricultural production potential.

In Trinidad, agriculture continues to receive consideration as the present and future economic backbone of the island, and it is expected to absorb an even greater share of the labor force--at increased rates of productivity--and to supply a greater proportion of the island's food needs and export crops.

In Barbados, production can be increased only by greater productivity on small farms and the use of higher yielding strains. The local Department of Agriculture is taking measures to promote this.

In the smaller Caymans (a former dependency of Jamaica), the absence of disease makes possible the planting of coconuts, though little advantage is taken of this fact. The construction of an airport in Grand Cayman Island has helped to stimulate the tourist trade, which may in turn stimulate some interest in fresh vegetable production.

In all four Windward Islands, agricultural production is increasing substantially and may be expected to continue, as a result of planting schemes including cacao, citrus, and bananas.

TABLE 9.--U.S.-The West Indies trade, 1958 and 1959

Product	U.S. exports to The West Indies (domestic) 1958	U.S. exports to The West Indies (domestic) 1959	Product	U.S. imports from The West Indies (for consumption) 1958	U.S. imports from The West Indies (for consumption) 1959
	1,000 dollars	1,000 dollars		1,000 dollars	1,000 dollars
Meat and meat products	3,496	4,018	Cacao beans and unsweetened cacao	4,286	3,475
Dairy products	653	576	Coffee, green, roasted or processed	1,022	1,243
Wheat flour	4,997	3,668	Spices	2,178	1,864
Other grains and preparations	1,745	1,465	Molasses, edible and inedible	2,013	2,964
Fruits and vegetables and preparations	1,807	2,032	Arrowroot, crude or manufactured	573	549
Mixed poultry feeds	2,524	2,723	Vegetable oils (distilled)	93	135
Food for relief or charity	87	489	Other agricultural products	467	536
Other agricultural products	2,786	2,645	Total agricultural	10,632	10.766
Total agricultural	18,095	17,616	Nonagricultural	91,872	82,291
Nonagricultural	52,030	56,579	Total imports	102,504	93,057
Total exports	70,125	74,195			

In the Leeward Islands production of crops will increase as production practices improve and idle land is brought into use. However, the disposition of more crops will depend on regular shipping services to carry the products to a wider market.

Sugar and bananas are expected to continue as the principal commercial crops of The West Indies, and production of these products will no doubt increase somewhat. Greater agricultural production in itself cannot keep pace with the growing population of the Federation and also permit an improvement in the standard of living. Therefore, the federal government is planning to develop tourism as a support for the economy of the small islands, as is being done on the larger ones. The Government is also encouraging processing industries based on local crops and on imported raw material, in order to create greater opportunities for employment. The establishment of the Federation will enable the islands to coordinate their economies so that each island may concentrate on producing the crops best suited to its soil and climate.

SELECTED LIST OF REFERENCES

Barbados. Department of Science and Agriculture. Annual Report. Bridgetown. Numerous issues, 1940-55.

________. Statistical Service. Abstract of Statistics. No. 1, 1956.

Jamaica. Central Bureau of Statistics. Digest of Agricultural Statistics, 1953. Kingston.

________. External Trade of Jamaica. Kingston. Various annual issues, 1951-58.

________. Department of Agriculture. Annual Report. Kingston. 1949, 1950, and 1952-56.

The West Indies. Federal Statistical Office. Quarterly Trade Statistics. Trinidad. September 1959 and March 1960.

________. Agricultural Statistics, Series 2, No.1. Trinidad. November 1960.

Trinidad and Tobago. Central Statistical Office. Annual Statistical Digest, No. 6. Trinidad. 1956.

________________. Overseas Trade Annual Report. Trinidad. 1951-58.

________________. Department of Agriculture. Administration Report. Trinidad. Annual, 1940-49, 1951, and 1954-56.

United Kingdom. Colonial Office. An Economic Survey of the Colonial Territories, 1951. Vol. 4 in The West Indian and American Territories. Colonial No. 281-4. London: H. M. Stationery Office. 1953.

________________. Development and Welfare in The West Indies, 1955-56, 1957. Bridgetown, Barbados. (Earlier volume 1955-56, Colonial No. 335.) London: H. M. Stationery Office.

United Nations. Food and Agriculture Organization. Report on Agricultural Development in the Caribbean. Report No. 629. Rome. 1957. Translated and printed in Trinidad.

U. S. Foreign Service. Numerous unclassified despatches received from the American Consulates in Jamaica and Trinidad.

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